

## REMARKS

Upon entry of the foregoing amendments, claims 12-23 will be pending in the present application. Claims 21 and 22 have been withdrawn from consideration by restriction. New claim 23 has been added. In new claim 23, the term “valorising” is replaced with “recovering” with regard to Zn and Pb in the fumes extracted from the process. Support for new claim 23 can be found in the as-filed specification at least in paragraph [0001]. (All citations to the present application are to the US publication thereof, US 2007/0095169). Reexamination of the application and reconsideration of the rejections and objections are respectfully requested in view of the foregoing amendments and the following remarks, which follow the order set forth in the Office Action.

### *Rejections under 35 U.S.C. §103*

#### I. Player

Claims 12, 15, 16, and 19 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,256,186 to Player et al. (“Player”). Applicants respectfully traverse.

Claim 12 recites a process for the valorisation of metal values in a Zn-, Fe- and Pb-bearing residue, comprising the steps of: subjecting the residue to a flash or agitated bath fuming step, thereby producing an Fe-bearing slag and Zn- and Pb-bearing fumes; and extracting the Zn- and Pb-bearing fumes and valorising Zn and Pb; wherein either one or more of CaCO<sub>3</sub>, SiO<sub>2</sub> and MgCO<sub>3</sub> are added as a flux before or during the fuming step so as to obtain a final slag composition with:

$$\frac{[Fe]}{[SiO_2]} + \frac{[CaO]}{[SiO_2]} + \frac{[MgO]}{3} > 3.5;$$
$$0.1 < \frac{[CaO]}{[SiO_2]} < 1.3; \text{ and}$$
$$6 < [SiO_2] < 22,$$

wherein all concentrations are expressed in wt%.

Player discloses a process for recovering Pb from Pb dusts and low Pb pyritic concentrates. *See*, claim 1. Player discloses recovering Pb in the slag, not the fumes, of the process. *See, id.* Further, Player discloses that the fumes from the furnace are recycled to the furnace rather than being extracted from the process, thus any Zn and Pb in the fumes is not

valorized from the fumes of the process but rather recycled to the furnace for subsequent recovery in the slag. *See*, c. 2, ll. 4-6. Thus, Player fails to disclose or suggest a process for the valorization of metal values comprising extracting the Zn- and Pb-bearing fumes and valorizing Zn and Pb, as recited in claim 12.

With regard to the term “valorizing”, the instant specification states “[t]he invention relates to a process for the separation and recovery of non-ferrous metals from zinc-bearing residues,” (*see, Abstract*) and “[t]his invention relates to the recovery of non-ferrous metals from zinc-bearing residues.” *See*, ¶ [0001], emphasis added. The specification further states “[t]he recovered fumes are rich in Zn and Pb, which are present as ZnO, PbO and/or PbSO<sub>4</sub>,” (¶ [0029]) and “[t]he invented process thus achieves the separation of metals as follows. Zn, Pb and Ge in the fumes, which can be treated by known means for separation of Pb and Ge in different residues, and of Zn in a leach liquor.” ¶ [0034]-[0035]. Accordingly, in the claimed process, the Zn and Pb that is present in the extracted fumes is separated and recovered from the process, not returned or recycled to the process, as disclosed in Player. Further, the American Heritage Dictionary defines “valorize” as “[t]o give or assign a value to.” “valorize.” *The American Heritage® Dictionary of the English Language, Fourth Edition*. Houghton Mifflin Company, 2004. 01 Feb. 2010. <Dictionary.com <http://dictionary.reference.com/browse/valorize>>. The instant process gives value to the Zn and Pb that is recovered in the fumes of the process. Given the specification of the instant application and the dictionary definition for the term “valorize”, it is clear that “valorising Zn and Pb” from the extracted Zn- and Pb-bearing fumes in claim 12 means something more than merely recycling the fumes (and the metals contained therein) to the furnace, as disclosed in Player. As further support for these statements, Applicants submit herewith the Declaration of Maurits Van Camp under 37 CFR 1.132.

Player discloses recycling fumes extracted from the furnace back to the furnace so that any metals contained in the fumes can be recovered in the slag. As such, one of ordinary skill in the art considering Player would have no reason to alter the process of Player to valorise the metals (e.g., Zn and Pb) in the extracted fumes, as recited in claim 12. Based on the foregoing, Applicants submit that claim 12 is not obvious in view of Player. As such, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

## II. Fugleberg

Claims 12-15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,199,974 to Fugleberg (“Fugleberg”). Applicants respectfully traverse.

Claim 12 recites a process wherein the final slag composition meets the following criteria:

$$\frac{[Fe]}{[SiO_2]} + \frac{[CaO]}{[SiO_2]} + \frac{[MgO]}{3} > 3.5;$$

$$0.1 < \frac{[CaO]}{[SiO_2]} < 1.3; \text{ and}$$

$$6 < [SiO_2] < 22,$$

wherein all concentrations are expressed in wt%.

Fugleberg discloses a method for recovering metals contained in various metallurgic waste precipitates or dusts. *See*, c. 1, ll. 7-9. Fugleberg discloses that volatilization of metals is controlled by adjusting the degree of oxidation in the furnace atmosphere. Fugleberg further discloses that the volatilization of zinc and lead requires reducing conditions, which reducing conditions (and hence degree of reducing) is easily adjusted by changing the fuel-oxygen ratio. *See*, c. 2, ll. 29-34. Fugleberg provides a data table showing the composition of the slag for Example 1 and a data table showing the composition of the slag for Example 2. Each table includes a value for the amount of components Fe and Fe<sub>3</sub>O<sub>4</sub>. Fugleberg states that the Fe<sub>3</sub>O<sub>4</sub> content is determined by using the Satmagan method.

With regard to the data tables, one of ordinary skill in the art would recognize and appreciate that the Fe content that is listed for the slag is the total Fe content in the slag. The Declaration of Maurits Van Camp under 37 CFR 1.132 is filed in support of the statements contained herein. Further, Applicants submit that one of ordinary skill in the art would appreciate that Fugleberg’s tables include the content of Fe<sub>3</sub>O<sub>4</sub> to report the fraction of the total Fe that is present as magnetite. This fraction can be readily measured using a Satmagan magnetic detector (as used in Fugleberg) as an indication of the degree of oxidation or oxidizing conditions in the furnace atmosphere. A metallurgist uses this value to adjust and optimize process conditions. Thus, Applicants submit that one of ordinary skill in the art would know that the amount of Fe<sub>3</sub>O<sub>4</sub> listed in the slag composition should not be added to the amount of Fe listed in the slag composition because the amount of Fe listed in the slag composition already indicates the total amount of Fe present in the slag.

If the correct values for Fe content in the slag are used for Fugleberg, it is clear that

Fugleberg does not disclose or reasonably suggest the process of claim 12 because Fugleberg does not disclose a slag composition meeting the requirements of claim 12. Accordingly, claim 12 is not anticipated by or obvious in view of Fugleberg. Applicants respectfully request reconsideration and withdrawal of the instant rejection.

### **III. Fugleberg and Baldock**

Claim 16 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fugleberg in view of U.S. Patent No. 5,282,881 to Baldock et al. (“Baldock”). Applicants respectfully traverse.

Applicants submit that the combination of Fugleberg and Baldock fails to render claim 16 obvious because the combination does not disclose or reasonably suggest all of the limitations of claim 16. As discussed above, Fugleberg fails to disclose or reasonably suggest all of the limitations of claim 12, from which claim 16 depends. Baldock does not overcome the deficiencies of Fugleberg because Baldock also fails to disclose a final slag composition meeting all of the requirements of claim 12. Because the combined references do not teach all of the limitations of claim 16, the Office Action fails to set forth a prima facie case of obvious for claim 16 in view of the combined references. Based on the foregoing, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

### **IV. Fugleberg and SU ‘810**

Claims 19 and 20 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fugleberg in view of SU 1048810 (“SU ‘810”). Applicants respectfully traverse.

Applicants submit that the combination of Fugleberg and SU ‘810 fails to render claims 19 and 20 obvious because the combination does not disclose or reasonably suggest all of the limitations of claims 19 and 20. As discussed above, Fugleberg fails to disclose or reasonably suggest all of the limitations of claim 12, from which claims 19 and 20 depend. SU ‘810 does not overcome the deficiencies of Fugleberg because SU ‘810 also fails to disclose a final slag composition meeting all of the requirements of claim 12. Because the combined references do not teach all of the limitations of claims 19 and 20, the Office Action fails to set forth a prima facie case of obvious for claims 19 and 20 in view of the combined references. Based on the foregoing, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

***Objectionable Allowable Subject Matter***

The Office Action indicates that claims 17 and 18 have been objected to as being dependent on a rejected base claim, but would be considered allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Having overcome the rejections against the base claim, Applicants submit that this objection is rendered moot. Applicants respectfully request reconsideration and withdrawal of the objection.

***Conclusion***

For the foregoing reasons, claims 12-23 are considered to be allowable. A Notice to this effect is respectfully requested. If any questions remain, the Examiner is invited to contact the undersigned at the number given below.

Respectfully submitted,

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